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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/847,981 | 05/02/2001 | Jason Seung-Min Kim | 2100653-991340 | 5778 |

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EXAMINER

SCHNEIDER, JOSHUA D

| ART UNIT | PAPER NUMBER |
|----------|--------------|
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2182

DATE MAILED: 07/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/847,981

Applicant(s)

KIM, JASON SEUNG-MIN

Examiner

Joshua D. Schneider

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 May 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 5/4/2005 have been fully considered but they are not persuasive. With regards to the rejection under 35 U.S.C. 112, second paragraph, applicant has argued that a software DMA system requires the use of a processor, it is still unclear that to what level of software is required. Software is well known to be running in the operation of almost any processor in the form of microprograms, as is taught by Tanenbaum. Tanenbaum teaches that such simple operations such as counting and clocking may be handled by such microprograms. It is unclear, based on Applicant's admission that a hardware processor is in fact necessary, to what extent the applicant is basing the software DMA engine in software and what is in hardware.

2. With regards to the rejections under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 5,884,027 to Garbus et al. in further view of "Structured Computer Organization" by Tanenbaum, applicant begins with the argument that not all of the limitations are taught by Garbus. This statement is true, but is irrelevant as the rejection is an obvious rejection. Applicant has also argued that the combination and arrangement of the components in Garbus are significantly different than those that are claimed. Applicant fails to point to what these differences are, or to how the rejections as stated are incorrectly mapped to the limitations of the claims, so this argument holds no weight. Applicant seems to argue with regards to claim 6 that the PCI to PCI bridge processor is not processor. This argument is very unclear and seems to be attempting to say that the teachings of reference are invalid. Such an argument holds no weight as the office holds all patents to be valid.

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3. The next argument is that Garbus does not render the claimed invention to be obvious. It should be obvious to applicant that the rejection is set forth such that Tanenbaum render the differences between Garbus and the instant application obvious, and reading any reference singularly is not a valid line of reasoning. Tanenbaum explains that the choice between hardware and software is a well known design choice, and that any hardware and software are logically equivalent and interchangeable. Applicant has provided no sound reasoning as to why such a teaching should be disregarded in this case. Due to the lack of any such reasoning, the arguments are found to be unpersuasive.

4. With regards to claims 2 and 9, applicant argues that other things are claimed in addition to data processing. This is true, but only “one or more” of the list of limitations is required by the claims, and as such the limitation as a whole has been taught.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 1-5 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Where applicant acts as his or her own lexicographer to specifically define a term of a claim contrary to its ordinary meaning, the written description must clearly redefine the claim term and set forth the uncommon definition so as to put one reasonably skilled in the art on notice that the applicant intended to so redefine that claim term. *Process Control Corp. v. HydReclaim Corp.*, 190 F.3d 1350, 1357, 52 USPQ2d 1029, 1033 (Fed. Cir. 1999). The term “software direct memory access” in claims 1-5 is used by the claim to mean “software based

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direct data transfer by a processor”, while the accepted meaning is “software based direct data transfer without the use of the processor.” The term is indefinite because the specification does not clearly redefine the term. A DMA transfer by definition a transfer that does not involve the processor for the transfer operations. The purpose of these types of transfers is to offload the task of transferring data from the processor(s). It is unclear what level of software involvement is required to execute the DMA transfer, and whether the software is a microprogram or an application. This makes it unclear as to whether any microprograms running on the processor may be considered to be a “software DMA engine,” as such microprograms are coupled to the processor that is coupled to the busses.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 5,884,027 to Garbus et al. in further view of “Structured Computer Organization” by Tanenbaum.

9. With regards to claim 1, Garbus teaches a first processor coupled to a first bus (Figs. 2, elements 25 and 17), a second processor coupled to a second bus (Figs. 2, elements 31 and 19), and a DMA engine in the second processor capable of executing the transfer of data between system resources connected to at least one of the first bus and the second bus (column 2, lines 9-33). Garbus does not explicitly teach the DMA engine is a software engine. In fact Garbus

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refers to the use of hardware, including DMA registers and a DMA controller in the P2P processor. However, it is well known that not all devices are hardware DMA compatible, and must be accessed using software DMA. Tanenbaum also teaches that hardware and software are logically interchangeable (page 11, third paragraph). It would have been obvious to one of ordinary skill in the art at the time of invention to replace the hardware DMA controller with a software DMA engine in order to eliminate the cost and space needed to implement hardware DMA.

10. With regards to claims 5 and 6, Garbus teaches the loading of multiple data packets from a device and storing these multiple data packets into the system memory at the specified locations (scatter/gather data chaining, column 42, line 44, through column 43, line 33).

11. With regards to claims 2 and 9, Garbus teaches the processing of data (scatter/gather and unaligned data transfer, column 42, line 44, through column 43, line 33).

12. With regards to claims 3 and 7, Garbus teaches RAM memories (column 3, lines 29-45) and hardware buffers for interfacing with devices (column 42, line 44, through column 43, line 33).

13. With regards to claims 4 and 8, Garbus teaches DMA through the use of hardware buffers for interfacing with devices (column 42, line 44, through column 43, line 33).

Conclusion

14. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO**

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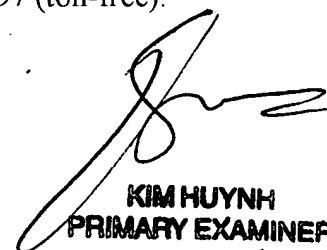
MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joshua D. Schneider whose telephone number is (571) 272-4158. The examiner can normally be reached on M-F, 8-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jeffrey A. Gaffin can be reached on (571) 272-4146. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JDS


KIM HUYNH
PRIMARY EXAMINER
7/7/05